

International Surface Pressure Data Bank

Purpose: To assemble an extensive collection of subdaily to monthly surface and sea level pressure observations taken over land and ocean from the beginning of barometric observations to the present.

Immediate needs: 20th Century Reanalysis Project, Northern Hemisphere SLP subdaily grids.

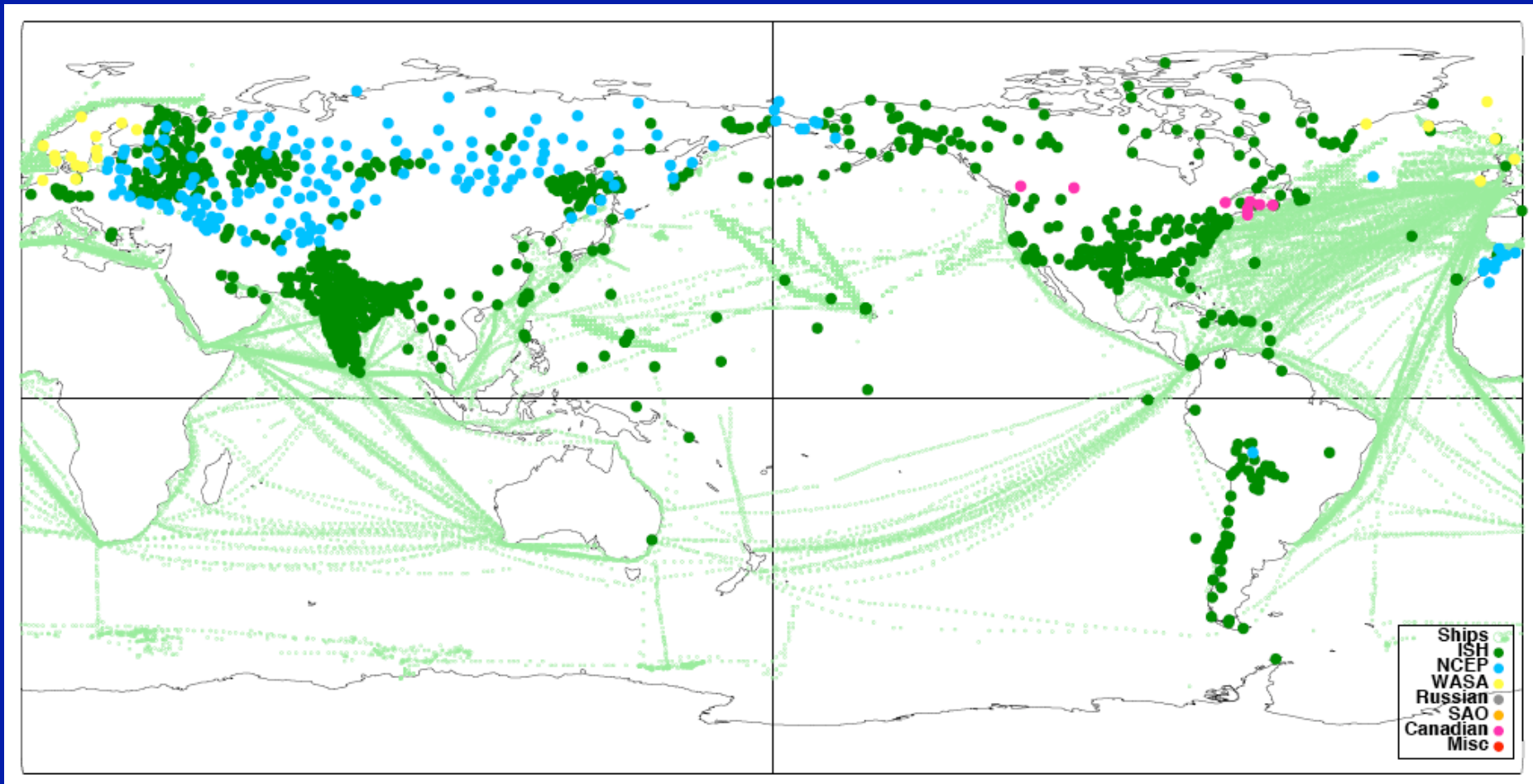
Principles:

1. Allow traceability of observations from original source archive to ISPD.
2. Allow direct feedback from data assimilation to original source archive.

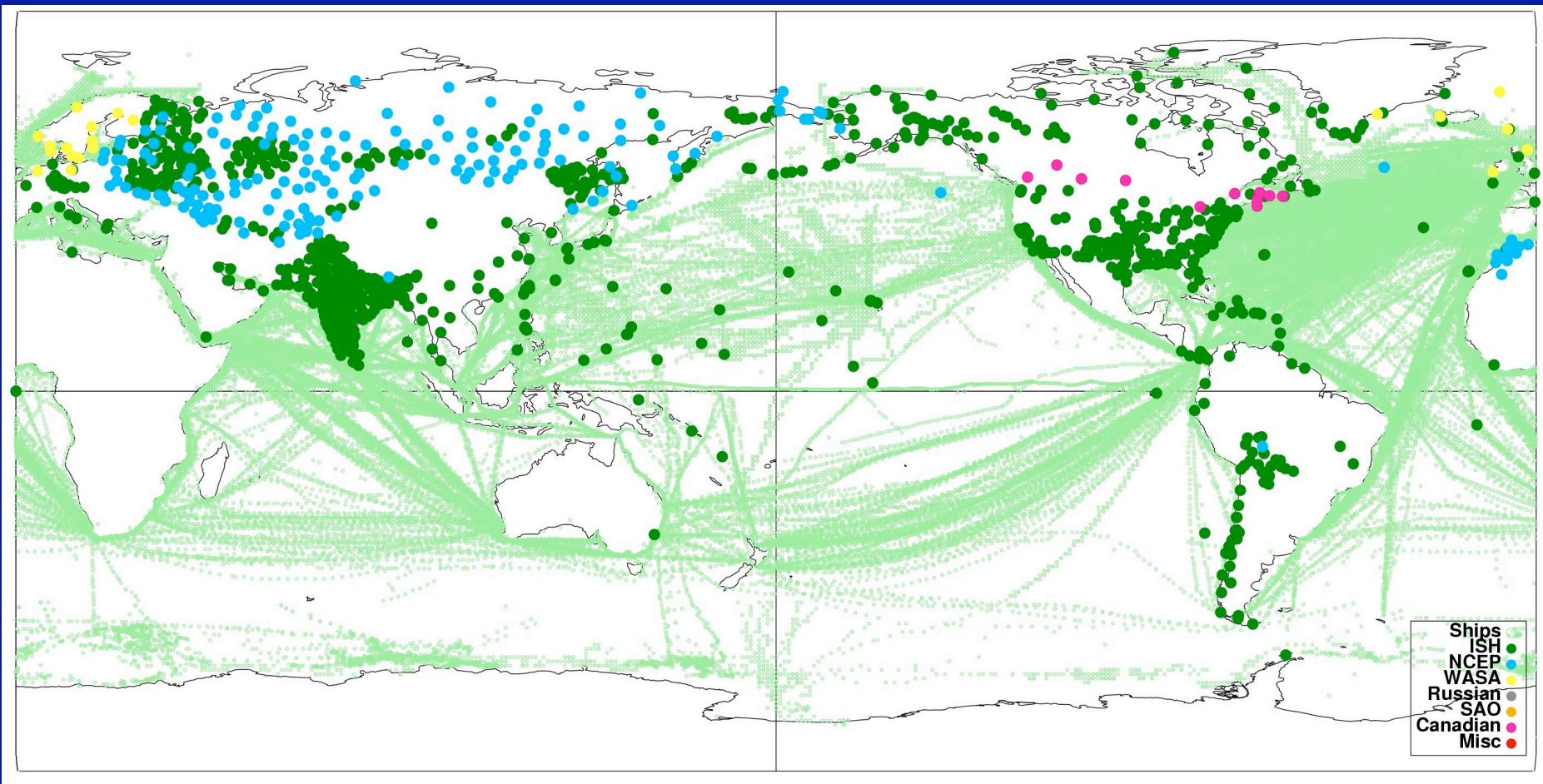
Data issues: What metadata, ancillary data, and corrections to track?

Data format issues: fixed format ASCII or metadata-aware, self-describing format (e.g., netCDF, HDF5).

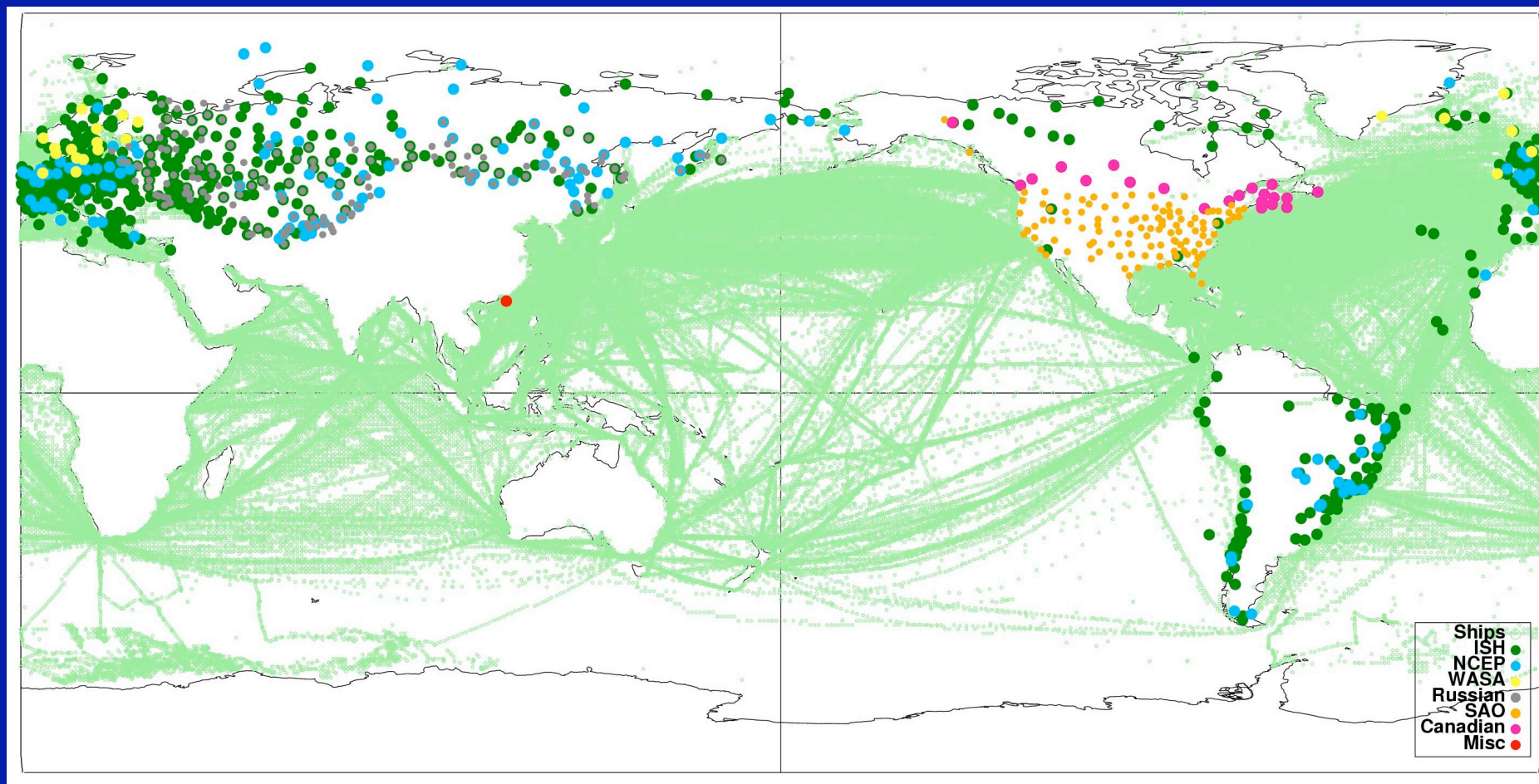
Sub-daily Pressure Observation locations Nov-Dec 1947



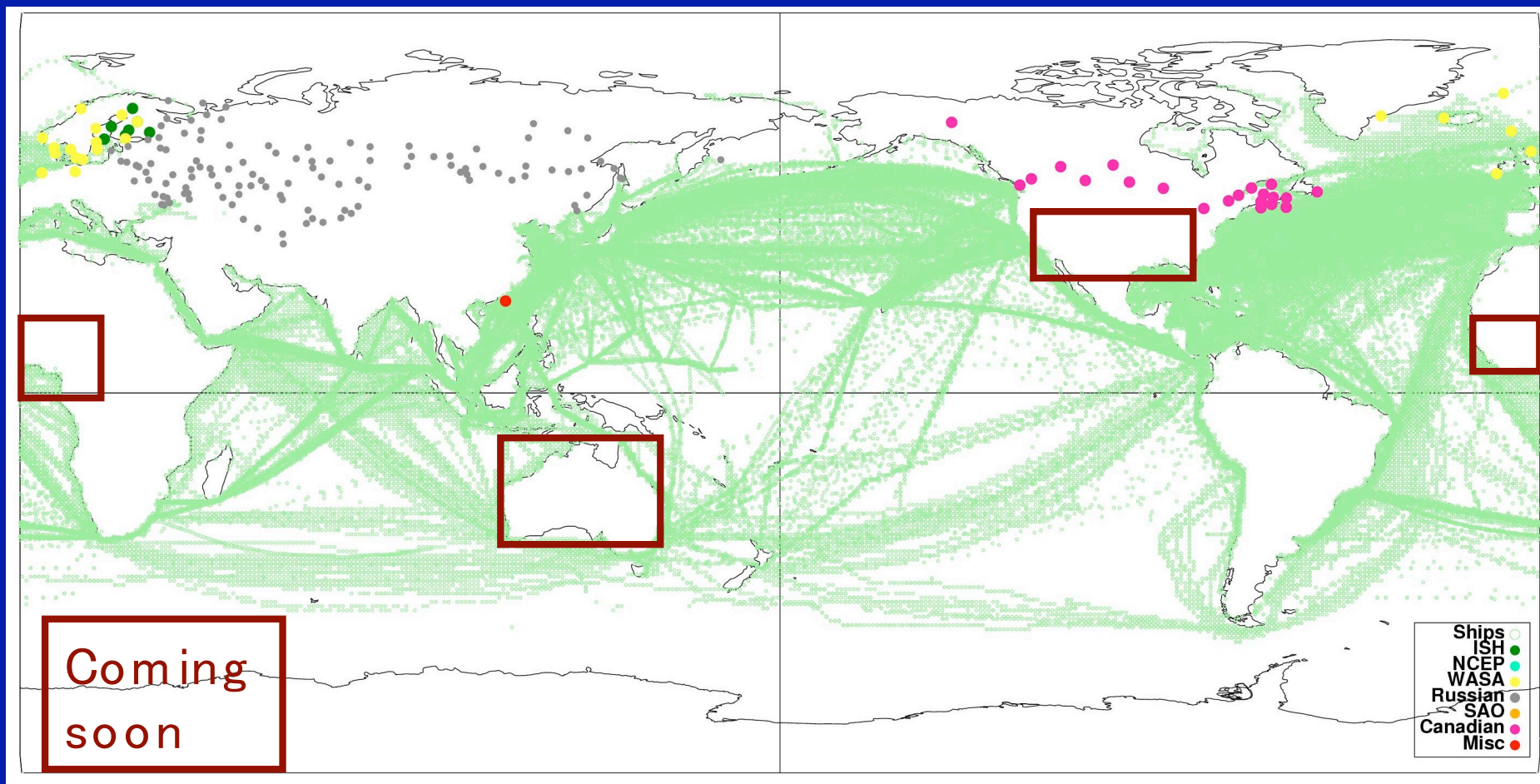
Sub-daily Pressure Observation locations Jan-Dec 1947



Sub-daily Pressure Observation locations Jan-Dec 1935



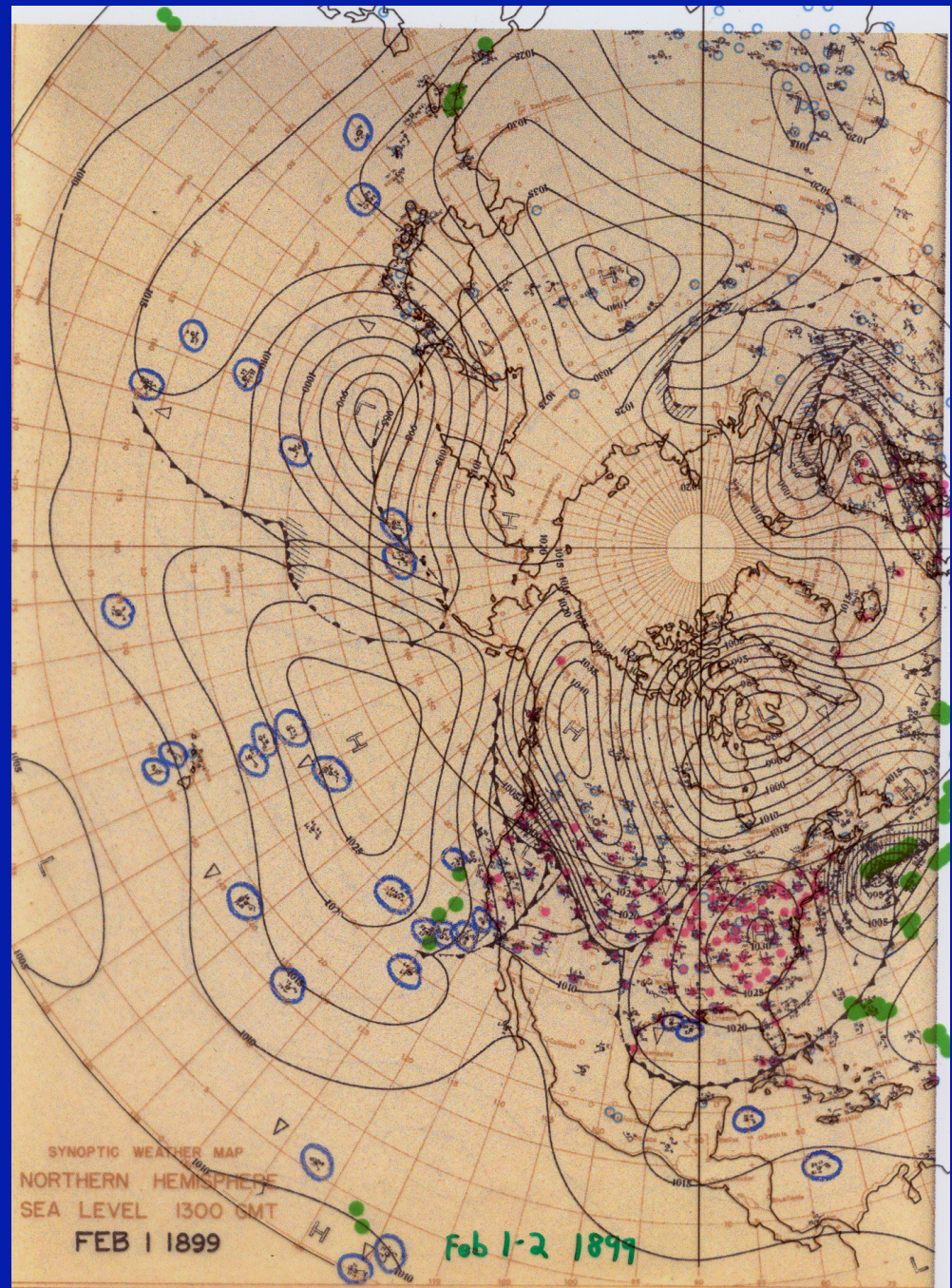
Sub-daily Pressure Observation locations Jan-Dec 1925



Comparison of ICOADS and US Historical Weather Map Feb 1 1899

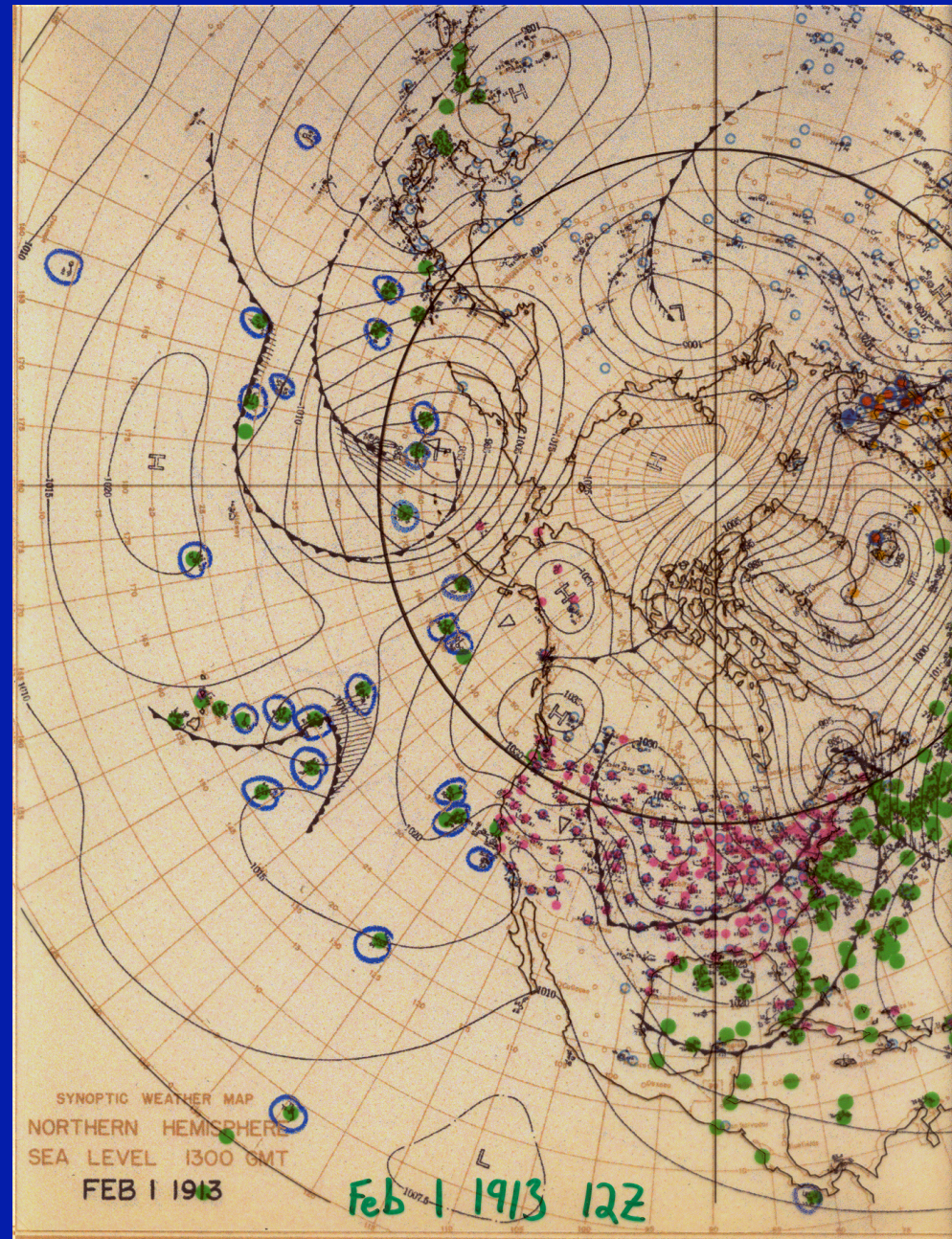
How many observations
could be available?

Large open blue circles:
US Merchant Marine obs
Filled green circles:
ICOADS 2.0



Comparison of ICOADS and US Historical Weather Map Feb 1 1913

Large open blue circles:
US Merchant Marine obs
Filled green circles:
ICOADS 2.0



List of collections for International Surface Pressure Data Bank

See MSWord File

ISPD Fields

Observation (station) ID, Observation ID Type, NCEP Observation Type
Year, Month, Day, Hour, Minute, Time code- describes how time was determined
Number of observations (if subdaily = 1, if an average = 2 or more)
Latitude, Longitude, Elevation
Observed Sea Level Pressure, Observation error, QC flag interpreted from source
Observed Surface Pressure, Observation error, QC flag interpreted from source
Pressure bias for marine data
Pressure instrument identifier code

Gravity correction made by source, Gravity correction made by ISPD
Temperature correction made by source, Temperature correction made by ISPD
Homogenization correction made by source, Homogenization correction by ISPD

International Surface Pressure Data Bank Collection ID
ICOADS source tracking: Source ID, Deck ID, Platform type
Land data source tracking: Source Flag, Report type code
Quality control codes for sea level pressure and surface pressure from source
Name of ship or station (30 characters)
Name of station library used for metadata, ISPD Format version

More ISPD Fields to track

Assimilation section:

Modified Observed pressure after vertically interpolating to model surface

Error in observed pressure vertically interpolated to model surface

Status flag for vertical interpolation (SLP or SP)

Duplicate Check, Assimilation Indicator, QC Background check, Buddy Flag

Ensemble Mean First Guess Pressure, Standard Deviation of Ensemble First Guess

Modified Observation Pressure minus Ensemble Mean First Guess Pressure

Ensemble Mean Analysis Pressure, Standard Deviation of Ensemble Analysis

Modified Observation Pressure minus Ensemble Mean Analysis Pressure

Issues

1. Current ASCII format is inflexible, what if more than one reanalysis or reconstruction?
 2. ASCII format is “readable” without special software – You can see the numbers!
 3. Can continue to have versions and append additional fields for other assimilations.
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1. Additional digital collections: DWD Marine archive
 2. Additional digital series: Lund, Macao
 3. Regional coordinators can rescue more data!